

CLAIMS

What is claimed is:

1. A pattern forming method for forming a film pattern by arranging droplets of a liquid material on a substrate, the method comprising:

a first step of forming a central part of the film pattern on the substrate using the droplets;

a second step of forming one side with respect to the formed central part;
and

a third step of forming the other side with respect to the formed central part.

2. The pattern forming method according to Claim 1,

wherein the droplets are arranged on the substrate so that the droplets overlap with at least a part of the central part formed on the substrate to form the sides.

3. The pattern forming method according to Claim 1,

wherein forming the sides using a plurality of droplets comprises:

a first arrangement step of arranging the plurality of droplets not to overlap with one another on the substrate; and

a second arrangement step of arranging droplets between the plurality of droplets arranged on the substrate using the first arrangement step.

4. The pattern forming method according to Claim 1,

wherein arrangement conditions of the droplets in the first, second, and

third steps are set differently.

5. The pattern forming method according to Claim 4,
wherein the arrangement intervals of the droplets on the substrate in the first, second, and third steps are set to different values.

6. The pattern forming method according to Claim 4,
wherein the volumes of the droplets in the first, second, and third steps are set to different values.

7. The pattern forming method according to Claim 1, further comprising a surface treatment step of adjusting a lyophobic property of the surface of the substrate before arranging the droplets on the substrate.

8. The pattern forming method according to Claim 1,
wherein the liquid material comprises conductive particles.

9. A pattern forming apparatus which has a droplet discharge device for arranging droplets of a liquid material on a substrate and forms a film pattern using the droplets,

wherein the droplet discharge device forms a central part of the film pattern on the substrate using the droplets and then forms one side and the other side with respect to the central part formed on the substrate.

10. A method of manufacturing a device having a wiring pattern

comprising a material arrangement step of arranging droplets of a liquid material on a substrate,

wherein the material arrangement step comprises:

a first step of forming a central part of the wiring pattern on the substrate using the droplets;

a second step of forming one side with respect to the formed central part; and

a third step of forming the other side with respect to the formed central part.

11. Conductive film wiring formed using the pattern forming apparatus according to Claim 9.

12. An electro-optical device comprising a conductive film wiring according to Claim 11.

13. An electronic apparatus comprising an electro-optical device according to Claim 12.

14. A pattern forming method for forming a film pattern by arranging droplets of a liquid material on a substrate, the method comprising:

a first step of discharging a first plurality of the droplets in an elongated central part of the film pattern on the substrate;

a second step of discharging a second plurality of the droplets along a first side of the formed central part, the second plurality of the droplets partially

overlapping the formed central part; and

a third step of discharging a third plurality of the droplets along a second side of the formed central part, the third plurality of the droplets partially overlapping the formed central part.

15. The pattern forming method of claim 14 wherein the first step further comprises:

discharging a first set of linearly spaced apart first droplets on the substrate;
and

thereafter discharging a second set of linearly spaced apart second droplets on the substrate, the second droplets filling in gaps between the first droplets.

16. The pattern forming method of claim 15 wherein the second step further comprises:

discharging a third set of linearly spaced apart third droplets along the first side of the formed central part; and

thereafter discharging a fourth set of linearly spaced apart fourth droplets along the first side of the formed central part, the fourth droplets filling in gaps between the third droplets.

17. The pattern forming method of claim 16 wherein:
the third droplets partially overlap the first droplets; and
the fourth droplets partially overlap the second droplets.

18. The pattern forming method of claim 16 wherein the third step further

comprises:

discharging a fifth set of linearly spaced apart fifth droplets along the second side of the formed central part; and

thereafter discharging a sixth set of linearly spaced apart sixth droplets along the second side of the formed central part, the sixth droplets filling in gaps between the fifth droplets.

19. The pattern forming method of claim 18 wherein:
the fifth droplets partially overlap the first droplets; and
the sixth droplets partially overlap the second droplets.

20. The pattern forming method of claim 19 wherein:
the third droplets partially overlap the first droplets; and
the fourth droplets partially overlap the second droplets.